WE CLAIM:

Sub A1

1. A viral vector for transducing a target cell which comprises a gene encoding a chimeric envelope protein containing a portion of an IgG-binding domain of protein A in which the envelope protein is a viral envelope protein or fragment thereof and wherein the envelope protein or the fragment is operable to direct the assembly of the fragment into a viral particle.

2. The viral vector of claim 1, wherein the viral envelope protein comprises a portion of a retroviral envelope protein.

3. The viral vector of claim 2, wherein the viral envelope protein further comprises a portion of a gp70 protein of a ecotropic murine leukemia virus or an avian leukemia virus.

4. The viral vector of claim 3, wherein the chimeric envelope protein consisting essentially of a fusion protein of the gp70 protein and the IgG-binding domain of protein A.

5. The viral vector of claim 4, wherein the viral vector is p439-ZZ.

Sub A2

6. The viral vector of claim 1, wherein the viral envelope protein comprises a portion of an alphavirus envelope protein.

7. The viral vector of claim 6, wherein the alphavirus envelope protein comprises a portion of a Sindbis virus envelope protein.

8. The viral vector of claim 7, wherein the portion of the IgG binding domain of Protein A is inserted into an E2 glycoprotein of the Sindbis virus envelope protein.

22. The viral complex of claim 20 in which the antibody binds an antigen which is selected from the group consisting of class I MHC antigens, class II MHC antigens, internalizing cell-surface receptors and viral receptors.

23. A viral complex which comprises a gene of interest under the control of an appropriate viral sequence and a chimeric alphavirus envelope protein.

24. The viral complex of claim 23, wherein the chimeric alphavirus envelope protein is a Sindbis virus envelope protein.

25. The viral complex of claim 24, wherein the appropriate viral sequence is a Sindbis viral sequence.

26. The viral complex of claim 25, wherein the Sindbis viral sequence comprises a portion of the nsP1-4 sequence.

~~24~~ 27. A packaging cell which comprises the viral vector of claim 1.

~~25~~ 28. The packaging cell of claim ~~27~~ 4, wherein the virus is an alphavirus and the packaging cell further comprises a heterologous gene encoding *bcl-2*.

~~29~~ 29. The packaging cell of claim ~~27~~ 4, wherein the packaging cell is an ecotropic cell.

~~30~~ 30. The packaging cell of claim ~~28~~ 5, wherein the packaging cell is an ecotropic cell.

~~31~~ 31. The packaging cell of claim ~~27~~ 4, wherein the ecotropic packaging cell is a $\psi 2$ packaging cell.

32. A packaging cell which comprises the viral vector of claim 11.

9. The viral vector of claim 8, wherein the chimeric gene encodes a protein consisting essentially of a fusion protein of an E2 glycoprotein of the Sindbis virus envelope protein and the IgG-binding domain of protein A.

10. The viral vector of claim 9, wherein the viral vector is DH-BB-ZZ.

11. A viral vector for transducing a target cell which comprises a gene encoding a chimeric envelope protein in which the envelope protein is an alphavirus envelope protein or fragment thereof, wherein the envelope protein or the fragment is operable to direct the assembly of the fragment into a viral particle and the chimeric envelop protein is capable of directing the viral particle to a specific cellular receptor.

12. The viral vector of claim 11, wherein the chimeric envelop protein comprises a cytokine or a portion thereof.

13. The viral vector of claim 12, wherein the cytokine is selected from the group consisting of brain derived neurotrophic factor, ciliary neurotrophic factor, colony stimulating growth factors, endothelial growth factors, epidermal growth factors, fibroblast growth factors, glially derived neurotrophic factor, glial growth factors, gro-beta/mip 2, hepatocyte growth factor, insulin-like growth factor, interferons, interleukins, keratinocyte growth factor, leukemia inhibitory factors, macrophage/monocyte chemotactic activating factor, nerve growth factor, neutrophil activating protein 2, platelet derived growth factor, stem cell factor, transforming growth factor, tumor necrosis factors and vascular endothial growth factor.

14. The viral vector of claim 13, wherein the cytokine is a transforming growth factor.

15. The viral vector of claim 13, wherein the cytokine is IL-2.

16. The viral vector of claim 11, wherein the chimeric envelop protein comprises a portion of a streptavidin molecule.

17. The viral vector of claim 11, wherein the chimeric envelop protein comprises a portion of an antibody molecule.

18. A viral complex which comprises a gene of interest under the control of an appropriate viral sequence and a chimeric protein comprising a chimeric envelope protein containing a portion of an IgG-binding domain of protein A.

19. The viral complex of claim 18, wherein the IgG binding domain is expressed on the surface of the envelope protein.

20. The viral complex of claim 18 wherein the complex further comprises an antibody targeting a particular cell of interest.

21. The viral complex of claim 20 wherein the antibody binds to a receptor for a cytokine, which cytokine is selected from the group consisting of brain derived neurotrophic factor, ciliary neurotrophic factor, colony stimulating growth factors, endothelial growth factors, epidermal growth factors, fibroblast growth factors, glially derived neurotrophic factor, glial growth factors, gro-beta/mip 2, hepatocyte growth factor, insulin-like growth factor, interferons, interleukins, keratinocyte growth factor, leukemia inhibitory factors, macrophage/monocyte chemotactic activating factor, nerve growth factor, neutrophil activating protein 2, platelet derived growth factor, stem cell factor, transforming growth factor, tumor necrosis factors and vascular endothial growth factor.

33. The packaging cell of claim 32, wherein the packaging cell further comprises a heterologous gene encoding *bcl-2*.

34. The packaging cell of claim 32, wherein the packaging cell is an ecotropic cell.

35. The packaging cell of claim 33, wherein the packaging cell is an ecotropic cell.

36. The packaging cell of claim 32, wherein the ecotropic packaging cell is a Ψ2 packaging cell.

37. The packaging cell of claim 32, wherein the packaging cell is an amphotropic cell.

38. A method of expressing a gene of interest in a target cell which comprises the steps of

a. forming a viral vector complex comprising:

1) a gene of interest operably linked to a promoter which is active in the target cell, and

2) a chimeric protein comprising an envelope protein and an IgG-binding domain of Protein A; and

b. contacting the viral complex with the target cell in the presence of an appropriate antibody;

wherein the contacting takes place under suitable conditions so that the viral complex is internalized into the cell wherein the envelope protein is a viral envelope protein or fragment thereof and wherein the envelop protein or the fragment is operable to direct the assembly of the fragment into the viral particle.

39. The method of claim 38, wherein the viral envelope protein comprises a portion of a retroviral protein.

40. The method of claim 38, wherein the chimeric protein consists essentially of a fusion protein having a gp70 protein and the IgG-binding domain of Protein A.

41. The method of claim 38, wherein the envelope protein comprises a portion of an alphavirus envelope protein.

42. The method of claim 41, wherein the alphavirus envelope protein is a Sindbis virus envelope protein.

43. The method of claim 38, wherein the IgG binding domain of Protein A is inserted into an E2 glycoprotein of the Sindbis virus envelope protein.

44. The method of claim 38, wherein the chimeric gene encodes a protein which consists essentially of a fusion protein of the E2 glycoprotein of the Sindbis virus envelope protein and the IgG-binding domain of protein A.

45. The method of claim 38, wherein the viral complex is preincubated with the appropriate antibody.

46. The method of claim 38, wherein the target cell is a target cell cultured *ex vivo*.

47. The method of claim 38, wherein the target cell is a target cell present in a mammalian animal.